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ABSTRACT

Data from the fifth sweep of Britain's National Child Development Study were analyzed to investigate the relationship between parents' literacy and numeracy problems, other parental characteristics, and their children's reading and mathematics abilities. Strong relationships were found between parents' self-reported literacy problems and their children's abilities, which were measured using reading and mathematics assessments. Where parents had reading problems, twice as many children were in the bottom quartile range of reading scores, compared with children whose parents did not report problems. Parents with any of the self-reported problems were more likely to have children who had low math and reading scores. Parental literacy problems were more closely associated with children's low reading scores than with low math scores. There was a strong relationship between children's low math scores and parental numeracy problems. Seventy-two percent of children from families where parents had reading problems and who were in the lowest income group and 54 percent of children from families where parents had reading problems and who had no school qualifications were in the lowest reading score groups. Where parents reported numeracy difficulties and had no school qualifications and were in the lowest income group, 79 percent of children were in the lowest score group for the math or reading tests. (YLB)

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ED 362 765

PARENTS AND THEIR children

THE INTERGENERATIONAL EFFECT OF POOR BASIC SKILLS

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PARENTS AND THEIR children

THE INTERGENERATIONAL EFFECT OF POOR BASIC SKILLS

FOREWORD

In the last year or two there has been a lot of interest in family literacy. Much of this has arisen from work in the United States and the writings of Tom Sticht and Ruth Nickse.

There has been plenty of anecdotal evidence that many people who struggle with reading and writing, also had parents who had problems with literacy. To some extent, it seems obvious that if you find reading and writing a problem, it will be more difficult to help your children become competent readers and writers. Not impossible, but more difficult.

However, there has been little objective evidence of the intergenerational effect of poor basic skills in the UK. Anecdotal evidence is not really good enough to make the case for the development of family literacy initiatives.

Furthermore, it is difficult to take evidence from the very different context of the United States and apply it to this country.

'Parents and their Children: The Intergenerational Effect of Poor Basic Skills' provides the first objective evidence of the link between a parent's competence in basic skills and the competence of their children. It is based on an analysis of the fifth sweep of the National Child Development Study (NCDS) and indicates a very strong correlation between low basic skills of parents and low attainment of children. When other factors, such as low income are introduced, the correlation is even stronger.

I am grateful to Scott Montgomery from the Social Statistics Research Unit at City University, London for providing the analysis and to Professor John Bynner for overseeing this important piece of work.

Alan Wells
Director ALBSU

SUMMARY

The relationship between parents' literacy and numeracy problems, other parental characteristics, and their children's reading and mathematics abilities was investigated using data from the fifth sweep of the National Child Development Study (NCDS). The cohort members were 33 years old when these data were collected, in 1991.

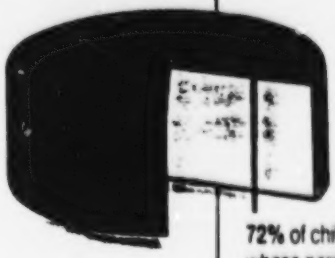
Strong relationships were found between parents' self-reported literacy problems and their children's abilities, which were measured using reading and mathematics assessments. Where parents had reading problems, twice as many children were in the bottom quartile range of reading scores, compared with children whose parents did not report problems.

Parents with any of the self-reported problems were more likely to have children who had low maths **and** low reading scores. Parental literacy problems were more closely associated with low children's reading scores than with low maths scores. There was a strong relationship between low children's maths scores and parental numeracy problems.

54% of children came from families where parents had reading problems and no school qualifications.

The relationship between parental problems and children's scores was strengthened when parent's school qualifications and family income were taken into account. 72% of children from families where parents had reading problems **and** who were in the lowest income group, were in the lowest reading score group. 54% of children from families where parents had reading problems **and** who had no school qualifications, were in the lowest reading score

group. Only 25% of children in the sample were in the lowest reading score group. Where parents reported numeracy difficulties and had no school qualifications and were also in the lowest income group, 79% of children were in the lowest score group for the maths or reading tests.



72% of children whose parents had reading problems and low incomes were in the lowest score reading group.

INTRODUCTION

The concept of family literacy is increasingly accepted as an important factor in determining children's literacy abilities and their educational progress. The process of education may be impeded for children whose parents suffer from a lack of basic literacy and numeracy skills.

This report examines the relationship between parents' literacy and numeracy difficulties and their children's abilities as measured by a maths test and a reading test. The report also looks at other family characteristics and how they relate to basic skills.

DATA FROM THE NATIONAL CHILD DEVELOPMENT STUDY

Data from the fifth sweep of the National Child Development Study (NCDS) were used for these analyses. NCDS is an ongoing longitudinal birth cohort study which

is following the lives of everybody born in Great Britain between the third and ninth of March, 1958. The fifth sweep was conducted in 1991 when cohort members were 33 years old. This survey comprised: an interview for cohort members which included questions about literacy and numeracy problems; self-completion questionnaires for the cohort members and their partners; an interview and self-completion questionnaires. 11,365 cohort members participated in the survey. In a sub-sample, one third of cohort members' children were tested. A total of 3,438 children were tested.

The analysis for this report is based on the sub-sample of children. Children who were under five years of age were excluded from this analysis as they were not asked to complete all of the reading and maths tests, leaving 2,617 children from 1,761 families. 50% of the children were between five and eight years and the others were up to eighteen years of age (only five of the children were over sixteen). 49% of the children were boys and 51% were girls.

This report focuses on the children, their test scores and family characteristics. Because some of the cohort members in NCDS had several children who were tested, more children than parents were represented in the data set. The children were linked to their parents so that full data were available for each child. This has resulted in analysis based on individual children and, in some cases, duplicated data for the parents.

VARIABLES USED IN ANALYSIS

The children's mathematical abilities were tested using the Peabody Individual Achievement Test (PIAT) Mathematics Assessment. This test consisted of a number of multiple choice arithmetic and mathematics questions. Literacy skills were tested using the Peabody Individual Achievement Test (PIAT) Reading Recognition Assessment. This test involved reading words aloud and recognising words and letters in multiple choice questions.

The raw scores produced by the maths and reading tests could not be used to compare children of substantially different ages because the scores increased with age. An age based standardised score based on standard deviation units was produced for the maths test and the reading test so that all children in the sample could be compared. The position of each child's score relative to the scores of all other children in the child's age group was calculated. The scores could then be legitimately compared, as the age effect had been eliminated. The quartile ranges were calculated: scores were divided into four groups to reflect maths and reading scores, each group containing 25% of the children.

The data used to describe the characteristics of the children's family background were taken from the information collected by the cohort member interview. This included the sex of parents and children, parental educational achievement as measured by school examination results, and parental income from employment and other sources. For 35% of the children a male parent or guardian was interviewed and for 65%, a female.

For **35%** of children a male parent or guardian was interviewed and for **65%** a female.

School qualifications were used to assess parental educational attainment. Most of the parents in this study would have had the opportunity to obtain these qualifications and they would all have been at school over the same time period (they are the same age), thus providing a valid basis for comparison. The **highest** qualification obtained at school was used in each analysis.

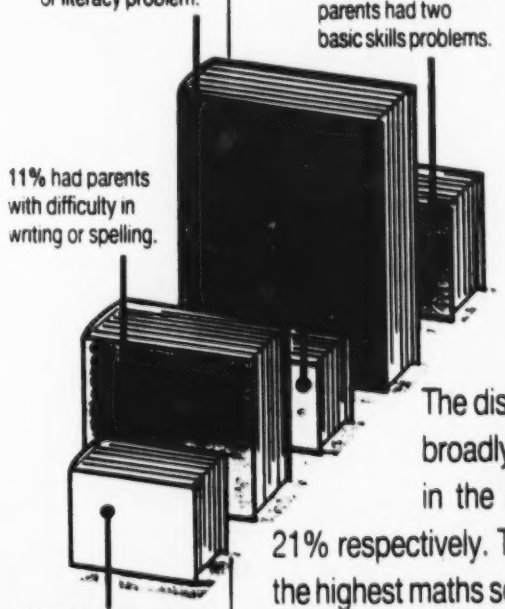
The measure of income was calculated in the following way: weekly net income from work for both parents has been added to weekly net income from benefits and all other income. The total net weekly income was then divided by the number of people in the family unit. Non-dependants (e.g. relatives other than partners and children) and other people who lived in the household but were not part of the family group (such as servants) were excluded from this calculation. The net family income was then used to divide the children into four groups, each containing a quarter of the total number of children. The groups were numbered one to four, with lowest income families in the first and the highest income families assigned to the fourth group. Social class based on occupation was not yet available from NCDS5 at the time these analyses were performed and parental income was the best indicator we had of social position.

Parental literacy and numeracy problems were identified using the following questions, which were included in the interview:

1. **As you probably know, thousands of adults have difficulties with reading or writing at one time or another. It would help us if you could answer some questions about your own experience of reading and writing. Since leaving school, have you had any problems with reading?**
2. **And since leaving school, have you had any problems with writing or spelling?**
3. **Since leaving school have you had any problems with numbers or simple arithmetic?**

PARENTS' READING PROBLEMS AND CHILDREN'S READING SCORES

4% of the children studied came from families with a parent who reported difficulty with reading. 11% had parents who said they had difficulty with writing or spelling. 4% had problems with numbers or simple arithmetic. 13% of children came from families with parents who had at least one basic numeracy or literacy problem. 5% came from families where the parent reported having at least two of the problems.


13% of children came from families where parents had one basic numeracy or literacy problem.
5% of children came from families where parents had two basic skills problems.
11% had parents with difficulty in writing or spelling.
4% of children came from families with parents who had reading difficulty.

The distribution of scores for boys and girls was broadly similar. There were more boys than girls in the lowest reading score group: 29% and 21% respectively. There was a higher proportion of boys in the highest maths score group: 28%, compared with 23% of girls in the same group. The relationship between cohort members' sex and their children's reading and writing scores was not found to be significant.

There is a powerful relationship between reading problems reported by the cohort members and their children's reading scores. Table 1 Shows that 48% of children, whose parents reported difficulty with reading, were in the lowest score category for the reading test. Amongst the children with parents who did not report difficulty with reading, only 24% were in the lowest score reading group. 26% were in the highest group without parental reading problems compared to only 13% in the group with problems. It is clear that children, with parents who said they had difficulty reading, were likely to obtain lower scores for the reading test, compared to children with parents who said they did not have difficulty reading.

TABLE 1 **Children's Reading Score by Parents With and Without Reading Problems**

Reading Difficulty *Reading Score*	*Yes* *%*	*No* *%*
1. Low	48	24
2.	22	25
3.	17	25
4. High	13	26
n(100%)	107	2500

TABLE 2 **Children's Reading Score by Parents' School Qualifications**

Parents **with** Reading Difficulty

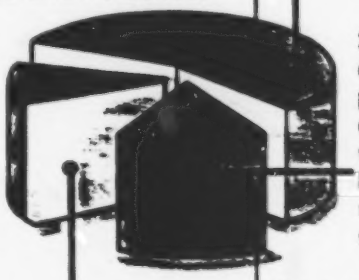
Any Qualifications *Reading Score*	*Yes* *%*	*No* *%*
1. Low	27	54
2.	15	24
3.	23	15
4. High	35	6
n(100%)	26	79

Parents **without** Reading Difficulty

Any Qualifications *Reading Score*	*Yes* %	*No* %
1. Low	21	32
2.	25	26
3.	26	24
4. High	28	18
n(100%)	1811	630

76% of the cohort members with reading problems did not get any qualifications when at school and the majority of the others with reading difficulties obtained qualifications to CSE grade 2 level or lower. A much higher level of academic achievement can be seen in the group without reading problems. If the group with reported parental reading problems is examined (Table 2), it is clear that more parents who had reading difficulties and no school qualifications had children who were likely to obtain a low score in the reading test. 54% of children in this group were in the lowest reading score group compared with 27% in the group where parents had qualifications. Only 6% of children were in the highest score group where their parents had reading difficulties and no school qualifications. Among parents without reading difficulties there was still a relationship between qualifications and children's scores, but it was weaker.

54% of children who had parents with no school qualifications and reading difficulty were in lowest reading score group.

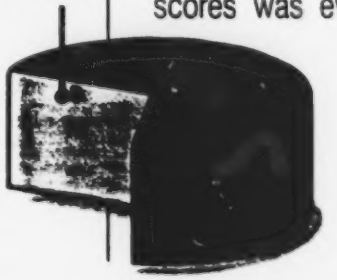


27% of children with parents with qualifications were in the lowest reading score group.

6% of children in highest score group had parents with reading difficulties and no school qualifications

The relationship between family income and reading scores was even stronger than that for qualifications (Table 3). The children from families with low incomes had lower scores than children from families with higher income. 72% of children from families where there were parental reading

72% of children with parents with reading problems and low income were in the lowest reading ability group.



problems **and** with a relatively low income were in the lowest reading ability group. Among the group without reading problems, there was a far weaker relationship with income.

TABLE 3 **Children's Reading Score by Family Income**

Parents **with** Reading Difficulty

	Family Income			
	Low			*High*
	1	*2*	*3*	*4*
	%	*%*	*%*	*%*
Reading Score				
1. Low	72	48	41	27
2.	7	30	18	27
3.	17	3	23	33
4. High	3	18	18	13
n(100%)	29	33	17	15

Parents **without** Reading Difficulty

	Family Income			
	Low			*High*
	1	*2*	*3*	*4*
	%	*%*	*%*	*%*
Reading Score				
1. Low	30	26	21	19
2.	26	25	25	25
3.	21	24	28	27
4. High	23	24	25	29
n(100%)	560	543	578	571

PARENTS' READING PROBLEMS AND CHILDREN'S MATHS SCORES

Children whose parents reported reading difficulties, were also likely to be less successful in the maths test: 40% of these children were in the lowest maths score group. Similar relationships can be observed in both the reading and maths scores for children with parents who reported difficulty with reading.

However, as might be expected, parental reading problems were associated with a greater tendency to lower reading scores than maths scores (Table 7).

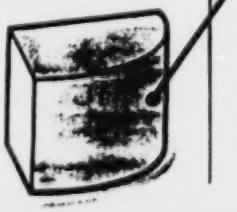
PARENTS' WRITING OR SPELLING PROBLEMS AND CHILDREN'S READING SCORES

There was a tendency for children, whose parents reported spelling or writing difficulties, to underachieve in the reading test: 44% of those whose parents reported difficulty were in the lowest score group and only 12% were in the highest group.

Parents who reported writing/spelling difficulty were liable to have gained fewer qualifications at school compared with those who did not have this problem. 57% of the parents with this problem had no qualifications at all and only 3% had A Levels. In the group containing parents with writing/spelling difficulties, the children's reading scores were likely to be higher where the parents had obtained qualifications: in the 'no qualifications' group 50% of the children were in the lowest score group, with 6% in the highest group; where parents had qualifications (and writing/spelling problems) 37% were in the lowest score group with 18% in the highest.

54% of children with parents reporting writing/spelling difficulties and low incomes obtained the lowest score.

The combined disadavantages of reported parental writing/spelling difficulties and low family income resulted in 54% of these children only obtaining the lowest score in the reading test. Where parents had this difficulty and were in the highest income group, only 38% of children were in the lowest score group.



38% of children with parents reporting writing/spelling difficulties but high income obtained the lowest score.

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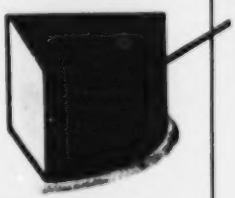
PARENTS' WRITING OR SPELLING PROBLEMS AND CHILDREN'S MATHS SCORES

The relationship between parental writing/spelling problems and children's maths scores is similar to the relationship between writing/spelling problems and the reading scores. The detrimental effect on the maths scores was somewhat less.

PARENTS' NUMERACY PROBLEMS AND CHILDREN'S MATHS SCORES

46% of children with parents with numeracy problems were in lowest maths test score group.

46% of children with parents who reported numeracy problems were in the lowest maths test score group compared with 24% of those who did not have numeracy difficulties. Children with parents who reported this difficulty were likely to achieve lower maths scores than those with parents who did not have difficulty with numbers.

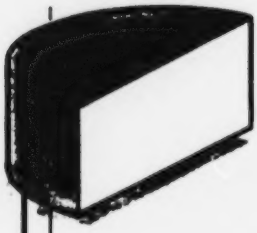


24% of children of parents with no numeracy difficulties were in the lowest maths score group.

TABLE 4 **Children's Maths Score by Parents With and Without Numeracy Problems**

Numeracy Difficulty / *Maths Score*	*Yes* %	*No* %
1. Low	46	24
2.	22	24
3.	14	25
4. High	18	26
n(100%)	92	2402

Parents who reported numeracy difficulties and had obtained no qualifications from school, had children of whom 50% were in the lowest numeracy score group



50% of children with parents who reported numeracy difficulties and no qualifications were in the lowest numeracy score group.

(Table 5). Where parents had qualifications, only 38% of children were in the lowest score category. The relationship was much weaker in the group without problems.

The combined effect of parental numeracy problems and being in the lowest family income group, was that 54% of these children achieved numeracy scores in the lowest category (Table 6). The disadvantage of having a parent who reported numeracy problems was significantly reduced by increasing family income. Within the high income group, there was an equal number of children in each of the four maths score categories. Among those without difficulties, the detrimental relationship between low income and maths scores was much less.

TABLE 5 **Children's Maths Score by Parents' School Qualifications**

Parents **with** Numeracy Difficulty

Any Qualifications *Maths Score*	*Yes* %	*No* %
1. Low	38	50
2.	21	22
3.	23	9
4. High	18	19
n(100%)	34	58

Parents **without** Numeracy Difficulty

Any Qualifications *Maths Score*	*Yes* %	*No* %
1. Low	21	33
2.	24	26
3.	25	25
4. High	29	16
n(100%)	1767	635

TABLE 6 **Children's Maths Score by Family Income**

Parents **with** Numeracy Difficulty

	Family Income			
	Low			*High*
	1	*2*	*3*	*4*
	%	*%*	*%*	*%*
Maths Score				
1. Low	54	46	8	25
2.	24	21	25	25
3.	5	21	25	25
4. High	16	12	42	25
n(100%)	37	24	12	12

Parents **without** Numeracy Difficulty

	Family Income			
	Low			*High*
	1	*2*	*3*	*4*
	%	*%*	*%*	*%*
Maths Score				
1. Low	26	25	24	23
2.	29	24	24	19
3.	23	25	27	25
4. High	22	26	25	33
n(100%)	534	557	565	557

PARENTS' NUMERACY PROBLEMS AND CHILDREN'S READING SCORES

Parents who reported difficulty with numbers had children who obtained lower scores in the reading test. Very similar patterns were observed in both the reading and maths scores when the other factors were considered. These children tended to have slightly more difficulty with maths than with reading.

CUMULATIVE PARENTAL DISADVANTAGE; LOW SCORING IN THE CHILDREN'S READING AND MATHS TESTS

54% of children had a low maths or reading score where their parents had difficulty with reading.

Table 7 shows the relationship between parental basic skills problems and children's reading and maths scores. 54% of children had a low maths or reading score where their parents had difficulty with reading. Where parents had any of the three literacy or numeracy problems, more than half of the children were in the lowest score group for maths or reading.

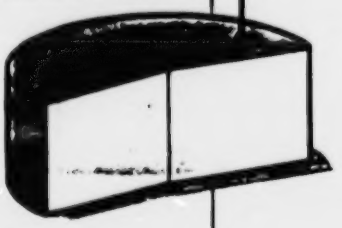


TABLE 7

Children in the Lowest Score Categories by Parental Problems

(Note: percentages do not add up to 100% as groups are not mutually exclusive)

Parental Problems	*Reading* %	*Writing* %	*Maths* %	*Any* %	*None* %
Low Maths	40	37	46	39	23
Low Reading	48	44	39	43	22
Low either	54	52	54	52	34
Low both	30	27	29	26	10
n(100%)	107	277	94	339	2263

76% of children had a low maths or reading score where parents had low income, no qualifications and a reading problem.

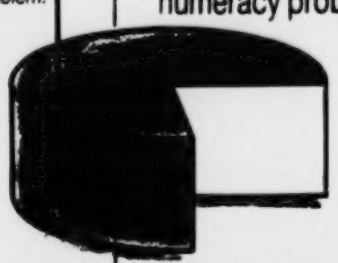


Table 8 shows that where parents reported a literacy or numeracy problem **and** they were in the low income group or had no school qualifications, a very high proportion of children were in one of the lowest test score groups. Parents with a reading problem and low income had children where 76% had a low score for one or both of the tests. If parents had a low income, no qualifications **and** a maths problem, 79% of

children had a low score for one of the tests. Where parents had a low income, no qualifications and a reading problem, 76% of children had a low score for maths or reading. In the sample as a whole, only 36% of children had either a low maths score **or** a low reading score.

In the sample as a whole **36%** of children had either a low maths score OR a low reading score.

TABLE 8 **Children in Lowest Score Groups by Parental Problems, Qualifications and Family Income**

Basic Skill Problem	*Income*	*Qualification*	*Children in Lowest Maths or Reading Group* %	*n*
Reading	Low		76%	(22)
Writing/Spelling	Low		62%	(52)
Maths	Low		70%	(26)
None	Low		37%	(182)
Reading		None	59%	(48)
Writing/Spelling		None	58%	(91)
Maths		None	58%	(35)
None		None	44%	(240)
Reading	Low	None	76%	(22)
Writing/Spelling	Low	None	67%	(42)
Maths	Low	None	79%	(26)
None	Low	None	48%	(69)
All children with low maths or reading scores			36%	(943)

CONCLUSION

The results suggest that children from families where parents have basic literacy problems are likely to suffer from a diminished opportunity to acquire literacy and numeracy skills. The disadvantage is compounded in families with a low income or where the parents achieved very low levels of educational attainment. Parents without these basic skills

are less able to help their children learn literacy and numeracy skills during their early formative years. It may, in part, be explained by the shared family background and circumstances of parents and children producing similar attitudes to education. Parents who did not perform well at school may be more likely to have children who are not motivated or encouraged to expend more than the minimum amount of effort on school work.

Children with parents who had difficulty reading were most likely to do badly in the reading test. This can be equated with reading being the most basic of literacy and numeracy skills. A very high proportion of parents with reading problems had no school qualifications. These children also tended to have lower scores in the maths test, indicating a general tendency to acquire fewer basic skills.

There was some evidence to suggest that specific parental difficulties were reflected in the children's scores. Parental literacy problems were associated with a greater tendency to lower reading scores, whereas parents with numeracy difficulties had children with a greater tendency towards lower maths scores.

The combination of parental literacy and numeracy problems, with a low level of parental education or low family income, can be used to identify the children who were most likely to perform badly in the maths and reading tests. The combination of low income (which is also an indication of social position) and parental literacy or numeracy difficulty is more likely to result in children who are in the lowest test score category. The group who are most at risk of growing up with the lowest levels of basic skills are children from low income families where the parents have poor reading abilities.

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